REMARKS

Reconsideration of this application, as amended, is respectfully requested.

THE ABSTRACT AND SPECIFICATION

The abstract and specification have been amended to correct some minor informalities of which the undersigned has become aware. No new matter has been added, and it is respectfully requested that the amendments to the abstract and specification be approved and entered.

THE CLAIMS

Non-elected claims 1-9 and 16 have been canceled, without prejudice, and claims 10-15 and 17 have been amended to more clearly recite the patentably distinguishing features of the present invention.

More specifically, claim 10 has been amended to clarify that the (at least one) microactuator device and portions of the base plate and the support spring adjacent to the microactuator device are coated with a coating film so that the microactuator device is entirely enclosed by the coating film, as supported by the disclosure in Fig. 10. (See also the disclosure in the specification at page 11, lines 10-22.)

In addition, claim 11 has been amended in a manner similar to claim 10, and some minor amendments have been made to each of

claims 12-15 and 17 to make minor grammatical improvements so as to put the claims in better form for issuance in a U.S. patent.

No new matter has been added, and it is respectfully requested that the amendments to the claims be approved and entered.

THE PRIOR ART REJECTION

Claims 10-15 and 17 were rejected under 35 USC 103 as being obvious in view of the combination of US 6,331,923 B1 ("Mei") and JP 62-88382 ("Nishizawa et al"), and claims 10-15 and 17 were also rejected under 35 USC 103 as being obvious in view of the combination of US 6,157,522 ("Murphy et al") and Nishizawa et al. These rejections, however, are respectfully traversed.

As recognized by the Examiner, both Mei and Murphy et al disclose a head supporting arrangement comprising a base plate, a support spring, and a pair of microactuator devices connected between the base plate and the support spring. As also recognized by the Examiner, however, neither Mei nor Murphy et al discloses, teaches or suggests coating the microactuator device and adjacent portions of the base plate and support spring with a coating film.

For this reason, the Examiner has cited Nishizawa et al for the disclosure therein of coating a laminated piezoelectric device in order to prevent electrode migration.

It is respectfully pointed out, however, that Nishizawa et al merely discloses coating the side surfaces of the laminated

piezoelectric device thereof with a coating film. (See Fig. 1 thereof and the English language Abstract. And as recognized by the Examiner, Nishizawa et al merely discloses the use of such a coating device for the purpose of preventing migration in the end parts of the silver conductor layers thereof.

By contrast, according to the structure of the present invention as recited in amended claims 10 and 11 the micro-actuator device(s) and portions of the base plate and the support spring adjacent to the microactuator device(s) are coated with a coating film so that the microactuator device(s) is/are entirely enclosed by the coating film. And as disclosed in the specification at page 11, lines 17-19, the coating film of the present invention serves to prevent the fall of released particles from the microactuator devices so that a recording medium used in a recording apparatus may be prevented from being damaged by the released particles.

Accordingly, it is respectfully submitted that even if the teachings of Nishizawa et al and either of Mei or Murphy et al were combinable in the manner suggested by the Examiner, the structure of the claimed present invention would still not be achieved. This is because the combination of these references does not disclose, teach or suggest coating a microactuator device and adjacent portions of a base plate and a support spring so as to entirely enclose the microactuator device, as according to the claimed present invention.

In addition, it is respectfully submitted that there would have been no motivation to achieve the structure of the claimed present invention since Nishizawa et al does not disclose, teach or suggest the use of a coating film for the purpose of preventing the fall of released particles from a microactuator device to protect a recording medium used in a recording apparatus, in the manner of the claimed present invention.

In view of the foregoing, it is respectfully submitted that the present invention as recited in amended claims 10 and 11, as well as each of claims 12-15 and 17 respectively depending therefrom, patentably distinguishes over the cited references, taken singly or in any combination, under 35 USC 103.

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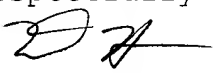
Entry of this Amendment, allowance of the claims and the passing of this application to issue are respectfully solicited.

If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned for prompt action.

Respectfully submitted,



Douglas Holtz
Reg. No. 33,902

Frishauf, Holtz, Goodman & Chick, P.C.
767 Third Avenue - 25th Floor
New York, New York 10017-2032
Tel. (212) 319-4900
DH:yu:sp

VERSION WITH MARKINGS TO SHOW CHANGES MADE

Claims 10-15 and 17 have been amended as follows:

10. (Amended) A head supporting arrangement comprising:

a base plate [to be fixed];

a support spring [for supporting a head]; and

[a] at least one microactuator device connected [to] between said base plate and said support spring,

wherein said microactuator device [being] and portions of said base plate and said support spring adjacent to said microactuator device are coated with a coating film [collectively with portions of said base plate and said support spring which are adjacent to] so that said microactuator device is entirely enclosed by said coating film.

11. (Amended) A head supporting arrangement comprising:

a base plate [to be fixed];

a support spring [for supporting a head]; and

a plurality of microactuator devices connected between said base plate and said support spring,

wherein said microactuator devices [being collectively covered] and portions of said base plate and said support spring adjacent to each of said microactuator device are coated with a coating film so that each of said microactuator devices in entirely enclosed by said coating film.

12. (Amended) A head supporting arrangement according to claim 11, further comprising a flexible substrate [receiving] on which said microactuator devices are mounted, [thereon and] said flexible substrate being connected between said base plate and said support spring [, said flexible substrate] and being coated with said coating film together with said microactuator devices.

13. (Amended) A head supporting arrangement according to any one of claims 10 through 12, wherein said support spring is elastically coupled [with] to said base plate.

14. (Second Amended) A disk recording apparatus comprising:

the head supporting arrangement according to any one of claims 10 through 12; and

a head supported by said support spring of said head supporting arrangement to access to a rotary disk,

wherein the microactuator device of said head supporting arrangement [carrying] is adapted to carry out fine adjustment of a positional relationship of said head with respect to said disk.

15. (Amended) A disk recording apparatus according to claim 14, wherein said head [is] comprises a magnetic head.

17. (Amended) A disk recording apparatus comprising:

the head supporting arrangement according to claim 13; and

a head supported by said support spring of said head supporting arrangement to access a rotary disk,

wherein the microactuator device of said head supporting arrangement [carrying] is adapted to carry out fine adjustment of a positional relationship of said head with respect to said disk.

VARIOUS CHANGES MADE TO SPECIFICATION

MICROACTUATOR DEVICE WITH A COUNTERMEASURE FOR PARTICLES ON A CUT FACE THEREOF

Background of the Invention:

This invention relates to a microactuator device comprising a multilayer structure including a plurality of piezoelectric elements and a plurality of internal electrodes alternately laminated and to a technique utilizing the microactuator device.

In various active apparatuses known in the art, use has been made of a microactuator device comprising a multilayer structure including a plurality of thin planar piezoelectric elements and a plurality of thin planar internal electrodes alternately laminated.

In the above-mentioned microactuator device, the internal electrodes are alternately exposed on opposite side surfaces of the multilayer structure to be connected to a pair of external electrodes formed on the opposite side surfaces, respectively. Typically, the internal electrodes and the external electrodes are formed by sputtering. After the external electrodes are formed on the multilayer structure, sintering or baking is carried out.

In case where the microactuator device is desired to have a small size, a large-sized structure is preliminarily prepared, baked, and then cut along a plane perpendicular to the external electrodes to obtain the microactuator device having a predetermined size. Taking into account the improvement in masking efficiency upon sputtering and the reduction in working cost also, it is advantageous to cut the large-sized structure into the predetermined size after baking.

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VARIOUS CHANGES MADE TO ABSTRACT

~~Abstract of the Disclosure:~~ e

In a microactuator device (2) having a cut face formed by cutting or splitting, the cut face is subjected to anti-release treatment for preventing release of particles produced by cutting. The microactuator device may ~~has~~ have a multilayer structure including a plurality of piezoelectric ceramics elements and a plurality of internal electrodes alternately laminated. In this case, the multilayer structure has the above-mentioned cut face. It is preferable that the microactuator device is mounted between a base plate (3) to be fixed and a support spring (5) for supporting a head (4), ~~wherein~~ and that the microactuator device and portions of the base plate and the support spring which are adjacent to the microactuator device are collectively coated with a coating film.

(~~Fig.~~ 9)

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